Cropland Idling
Issues No. 3 and 4 - DRAFT Delta/Yolo Bypass Transfers

Background

Issue

The California Department of Water Resources (DWR) received several water transfer proposals in 2009 from agencies and individuals who divert water from and discharge to the Yolo Bypass/Tule Canal and Delta Channels. The issue addressed here is whether or not transfers from districts or landowners diverting from and discharging to the Delta or Yolo Bypass can be approved with sufficient confidence that the transfer will not result in injury to other legal users of water or the environment.

Discussion

For purposes of this discussion, the Delta is defined as the legal Delta described in Water Code Section 12220. Substantial portions of the land within the Delta are below sea level as shown on Figure 1 and climatic conditions can differ substantially from those experienced throughout the Sacramento Valley. The Tule Canal is located at the eastern edge of the Yolo Bypass and discharges to the toe drain and ultimately to the Delta at Cache Slough downstream of the Barker Slough Pumping Plant (see Figure 2). The toe drain is tidally influenced and water levels are controlled by operation of the Lisbon Weir. At times during the summer months there can be a net upstream flow in the toe drain. Questions regarding hydraulic connectivity with the Delta were raised in 2009.

DWR did not approve water transfer proposals submitted to the Drought Water Bank from the Delta or Yolo Bypass/Tule Canal area due to questions over how to determine the quantity of transferable water and whether the transfer water would be available at times and locations where it could be exported by the State Water Project (SWP). The unique conditions present in the Delta, particularly the Delta lowlands create significant risk that the estimates of transferable water will differ substantially from those based on evapo-transpiration pattern of applied water (ETAW) values for the Sacramento Valley. In addition, current Delta compliance criteria controlling SWP and Central Valley Project (CVP) (collectively Projects) operations result in substantial risk that the Projects cannot account for and export the transfer water made available.

Primary Concerns

1. Water is made available primarily through crop idling – There is substantial uncertainty in how to estimate and verify real water savings, particularly in the Delta

- Establishing baseline crop ETAW
  - ETAW for crops in Delta can vary significantly from similar crops in the Sacramento Valley, and even within different areas of the Delta itself
  - Need site specific data from non transfer years or immediately adjacent acreage to establish baseline ETAW
- Idle field consumptive use – High groundwater areas
  - High groundwater results in high bare soil evaporation
  - Difficult to maintain fields in idle condition due to excessive weed growth
  - Intensive/potentially cost prohibitive weed abatement required
  - Potential environmental issues associated with aggressive disking/weed abatement measures
- Extensive Instrumentation and monitoring requirements to establish real water
  - Varying conditions on large tracts of land – type and extent of weed growth
  - Extrapolating data from limited instrument locations to Project wide estimate
  - How many stations necessary
  - Acceptable types of instrumentation
  - Who performs/evaluates monitoring data
  - Extrapolation method will affect calculation of transferable water
- Water is made available on consumptive use pattern for idled crop. Real-time monitoring and verification data not received and analyzed until after water is exported
  - Adjustments to transfer quantities are required after water has been exported if data does not match estimates of transferable water

2. Water made available in the Yolo Bypass/Tule Canal must be preserved through the Tule Canal to the Toe Drain to Prospect Slough and Cache Slough to the Delta Channels

- Toe Drain is tidally influenced
- Periods of net negative flow in Toe Drain during transfer period – will reductions in use be realized in Delta channels
- Does hydraulic connectivity exist to upper reaches of Tule Canal at all times during transfer period?

3. Transfer water is made available downstream of some Project compliance locations

- At times Project operations are being controlled to meet inflow/ outflow based objectives, compliance locations are upstream of Delta (see D1641)

  - i.e. Delta Outflow (NDOI), Export/Inflow Ratio, outflow based salinity objectives
- NDOI = Delta Inflow – Net Delta Consumptive Use (CU) – Delta Exports
  - Delta inflow term includes inflow from locations above Delta/Yolo Bypass transfer discharge locations (Freeport, Eastside Streams, Vernalis)
- Delta CU estimates used in outflow calculations derived from DAYFLOW model output, not real time values, do not account for transfer land use changes
- Exports are made on real time basis; analysis of monitoring data to calculate real water savings lags exports by minimum of two weeks to over month; adjustments to Delta CU term (to account for transfer water in calculation of NDOI) based on initial estimates of transferable water may result in Project exports in excess of quantities based on later analysis of monitoring data, potentially affecting Project compliance with NDOI,
- During 2009 Transfer Window (Jul-Sep) NDOI controlled through September

4. Water made available outside transfer window cannot be exported or stored

- Transfer window resulting from terms contained in existing BOs generally July through September
- Crop idling generates water savings May or June through September
- Delta conditions typically prohibit operational changes necessary to store or back up May/June water

5. Underlying water rights

- Many Delta diversions not covered by post 1914 appropriate rights
- Pre-1914 claimed rights often not verified
- Claimed/assumed riparian use generally not verified and riparian rights not transferable

Recommendation for 2010

Given the high degree of uncertainty in estimating and preserving transferable water and the substantial risk that the Projects cannot account for (and therefore export) the water made available, it is recommended that transfers not be approved from lands within the Delta or Yolo Bypass. The high degree of uncertainty imposes substantial risk on the Purchaser that the water cannot be exported and on the Projects that the estimated quantity of transfer water will not actually be available, requiring the Projects to make up any shortfall which would result in an injury to the Projects as legal users of water.

Proposals from the Tule Canal could be considered on a case by case basis if the proponent is able to obtain concurrence from the State Water Resources Control Board (SWRCB) that the estimated reduction in consumptive use can be accounted for

separately in meeting flow related compliance objectives. Approval should be restricted to areas with established appropriative rights that are not subject to high groundwater conditions. Proponents should provide documentation that hydraulic connectivity with the Delta exists at all times during the transfer period. Transfer proponents must recognize that it is very unlikely export capacity will be available during May and June and that operational restrictions may prevent the Projects from exporting the transfer water even within the typical transfer period of July through September.

Proposals within the Delta could be considered on a case by case basis for diverters with established post 1914 water rights if the proponent is able to obtain concurrence from the SWRCB that the estimated reduction in consumptive use can be accounted for separately in meeting flow related compliance objectives and that any reductions in the initial estimates of consumptive use derived from the real time monitoring data will not affect DWR's compliance with the objectives contained in D1641. If the seller can obtain specific approval from the SWRCB, extensive monitoring and reporting requirements, acceptable to DWR and Bureau of Reclamation (Reclamation) and paid for by the transfer proponents, should be required to determine and verify transferable water. Minimum requirements for areas within the Delta uplands not subject to high groundwater conditions should include: instrumentation to establish baseline ETAW (either prior years on the proposed acreage or the year of the transfer on adjacent acreage with similar crops) and periodic site visits by Project staff. Minimum requirements for proposals from areas subject to high groundwater conditions or any area within the Delta lowlands, should include: instrumentation to establish baseline ETAW (either prior years on the proposed acreage or the year of the transfer on adjacent acreage with similar crops), instrumentation to measure bare soil and idle field vegetation growth ET sufficient to represent the entire transfer acreage, weekly site visits with photographic documentation of each field (conducted by consultants acceptable to and evaluated by the Projects or by Project staff and funded by the transfer proponents), satellite imagery, aerial photography as required, a vegetation control program approved by the Department of Fish and Game (DFG) and a method for repaying the Projects for any transfer water delivered during the transfer window that was subsequently determined to be in excess of the measured quantities. Transfer proponents must recognize that it is very unlikely export capacity will be available during May and June and that operational restrictions may prevent the Projects from exporting the transfer water even within the typical transfer period of July through September. Transfer proponents would assume all risk associated with potential reductions in the quantity of transferable water determined to be made available.

Future Discussions for the Long-Term Program

1. Uncertainty in estimating and verifying transfer water

- Technologies such as surface renewal are available to estimate idle field ETAW

  - The various technologies have limitations and the data must be extrapolated from the instrument location to the entire field or fields

- Efforts can be taken in anticipation of future transfers to measure baseline ETAW
- Extensive verification and monitoring programs can be developed to minimize the risk of over or under estimating transferable water
- Transfer approval can be conditioned on either keeping the idle fields weed free or measuring idle field ETAW and deducting the resulting ETAW from the transferable water, seller should coordinate with DFG to develop an acceptable weed abatement program
- A number of buyers have long term water supply contracts for Project water. The buyers Project supplies can be used to backstop the transfer. Following final verification, any over delivery can be reclassified as Project water

2. Will transfer water from Yolo Bypass be available in Delta channels

- Proponents can provide documentation of hydraulic connectivity at location of transfer
- Verify that sufficient water exists at all times in toe drain for existing demands
- With hydraulic connectivity, reduction in diversions should influence water available in Delta channels.

3. Water is made available downstream of compliance locations

- Transfer proponents with post 1914 appropriative rights can include a request in their Petition for Change submitted to the SWRCB to allow the Projects to specifically account for the transfer water in its calculation of NDOI
- DWR and Reclamation can petition SWRCB for a change in D1641 to recognize transfer quantities in calculation of NDOI – this could be contentious process

4. Water is made available outside transfer window

- Recognition of potential loss of transferable water can be acknowledged in transfer price or proponents can assess potential for loss of water when weighing benefits and need for water

5. Underlying water rights

- Sellers can document basis for appropriative diversion right

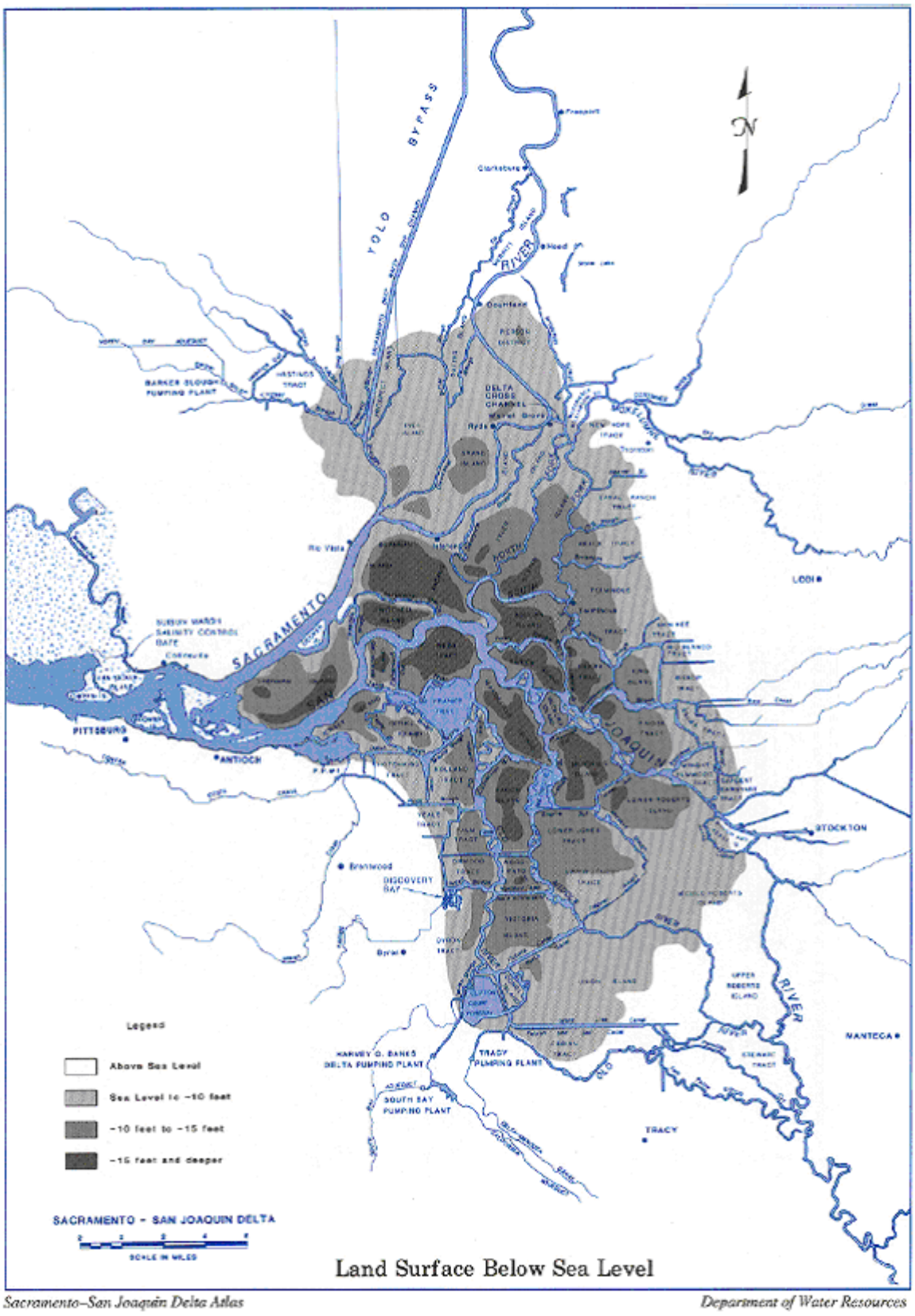

Figure 1. Sacramento – San Joaquin Delta

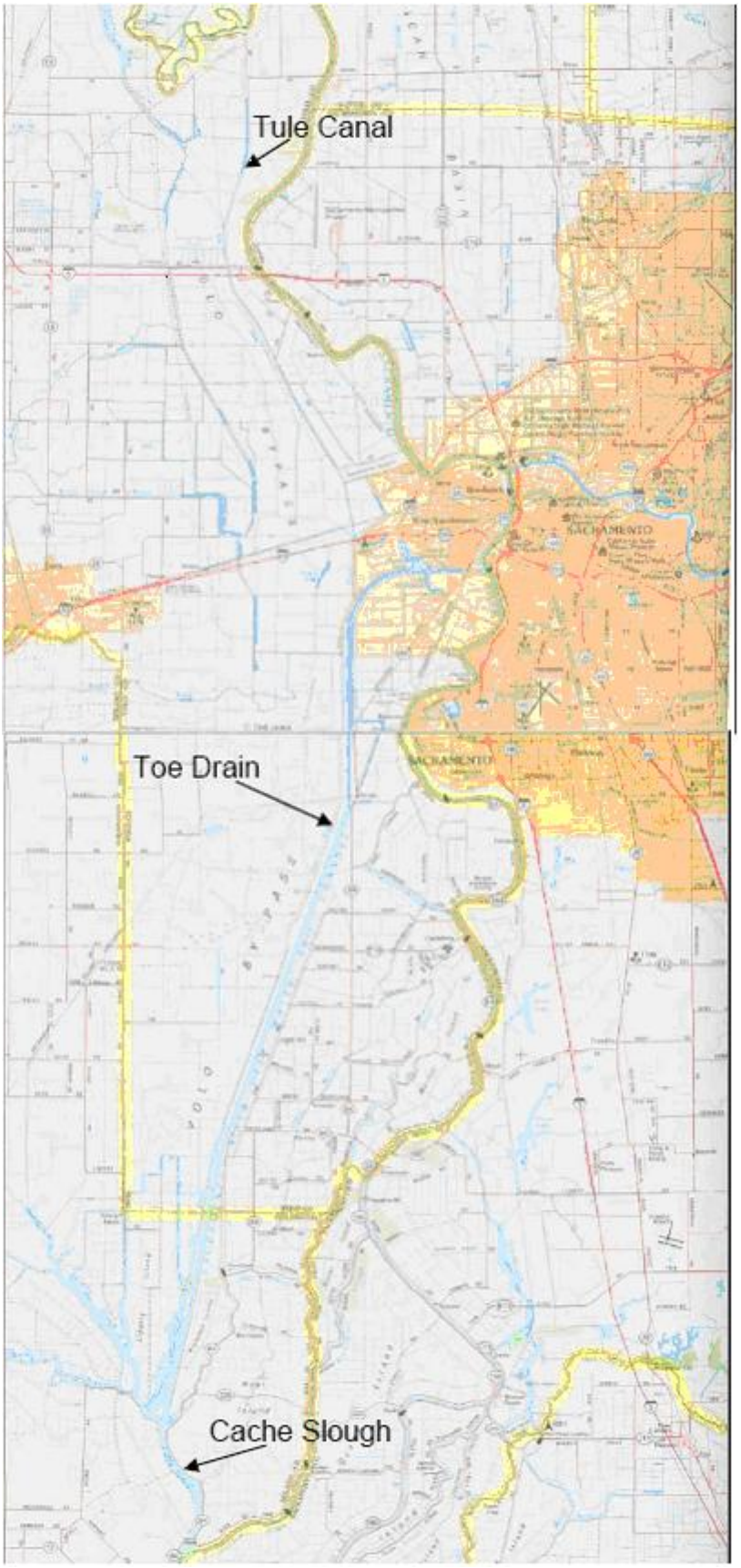

Figure 2. Tule Canal and Yolo Bypass